

WELCOME

Tom Estock welcomed the group to the Voluntary Emission Reduction Registry workshop hosted by Quad/Graphics.

INTRODUCTIONS

Persons in attendance were:

Steve Jackson - Alliant Energy, Madison

Jim Surfus - Miller Brewing Company,
Milwaukee

Audrey Templeton - Miller Brewing Company,
Milwaukee

Susan Rosenberg - Madison Gas & Electric,
Madison

Brenda Kubasik - BT2, Madison

Greg Failey - Mitchell Field Airport, Milwaukee

Barbara Smith - Department of Administration,
Energy Division, Madison

Mike Yunk - Department of Administration,
Energy Division, Madison

Jim Mapp - Department of Administration,
Energy Division, Madison

David Sumi - PA Consultin, Middleton

Rebecca Grossberg - Madison Environmental
Group, Madison

Steve Heins - Orion Energy Systems, Plymouth

Donna Danihel - WE Energies, Milwaukee

Tom Estock - Quad Graphics

Eric Mosher - DNR Central Office, Madison

Addi Faerber - DNR Central Office, Madison

Ed Jepsen - DNR Central Office, Madison

Jessica Lawent - DNR Southeast Regional Office,
Milwaukee

WHY WE ARE HERE

Eric Mosher discussed the upcoming launch of the Registry, and encouraged workshop participants to register their reductions early. Those reductions will be already in place when the registry launches, thereby creating a group of charter members of the registry. Mr. Mosher also noted that this workshop was a dress rehearsal for the workshops which will occur after the Registry is officially launched.

REGISTRY OVERVIEW

1. The Origin of the Registry
 - a) DNR Recommends that Wisconsin reduce greenhouse gas emissions (1991)
 - b) Wisconsin Climate Change Action Plan recommends credit for early reductions of greenhouse gas emissions (1998)
2. The Registry Law (s. 285.78, WI Stats.)
 - a) Shall Register Greenhouse Gas Reductions
 - b) May Register Other Air Contaminants
 - c) Strictly Voluntary
 - d) May Register Energy Efficiency, Renewable Energy and Carbon Sequestration Projects
 - e) Retroactive back to 1991 for GHGs
 - f) The Department Shall Promulgate Rules
3. The Registry Rule
 - a) Chapter NR 437, Wisconsin Administrative Code
 - b) The first multi-pollutant emission reduction registry
4. Registry Components
 - a) Registry Web Site
 - b) Registration Forms
 - c) Database/Data Tables
 - d) Registry Handbook
 - e) Outreach materials

5. The Emission Reduction Registry System
 - a) The registrant applies
 - b) The DNR registers
6. How the Registry Works
7. Benefits of registering voluntary reductions
 - a) Get ahead of the curve
 - b) Public recognition
 - c) Baseline protection
 - i) The emission reduction is the difference between baseline emissions and reduced emissions
 - d) Emissions Trading
8. Bemis Manufacturing Example
 - a) Energy Savings: 6.3 million kWh per year
 - b) Cost Savings: \$318,000 per year
 - c) CO₂ Reduction: 4,725 tons per year
 - d) SO₂ Reduction: 17.4 tons per year
 - e) NO_x Reduction: 40.3 tons per year

WEB SITE DEMONSTRATION

Addi Faerber demonstrated portions of the VERR web site.

1. Ms. Faerber informed the attendees that the web site is only part of the Voluntary Emission Reduction Registry. Behind the web site lies a database that holds all of the information about each registered reduction, including contact information and calculation details.
2. How to get to the VERR web site from www.dnr.state.wi.us
 - a) Scroll to the bottom of the DNR home page. Pull down the "Go Directly to a Program" menu and select "Air Management."
 - b) On the left toolbar, under "Voluntary Programs" select "Voluntary Emission Reduction Registry."
 - c) The URL is <http://www.dnr.state.wi.us/org/aw/air/registry/>
3. How Reductions appear on the web site
 - a) Information about registered reductions are displayed in three places on the web site:
 - b) <http://www.dnr.state.wi.us/org/aw/air/registry/index.html> shows a sum total of this year's registered reductions.
 - c) <http://www.dnr.state.wi.us/org/aw/air/registry/reductions.html> shows the reduction table listing details about each reduction.
 - d) <http://www.dnr.state.wi.us/org/aw/air/registry/partners.html> shows a short summary of the project information.
 - e) Jim Mapp asked whether or not the DNR could list a contact person associated with each registered reduction. Addi Faerber replied that, no, the DNR does not like to put personally identifying information onto the DNR web site. However, Ms. Faerber will add content to this page informing viewers to contact the DNR and they will return contact information.
4. How the web site can help you with registration.
 - a) [Http://www.dnr.state.wi.us/org/aw/air/registry/registration.html](http://www.dnr.state.wi.us/org/aw/air/registry/registration.html) outlines the entire process of registering your emission reduction.
 - i) [Http://www.dnr.state.wi.us/org/aw/air/registry/table1.html](http://www.dnr.state.wi.us/org/aw/air/registry/table1.html) lists the eligible compounds for registration and the thresholds for each compound.
 - ii) <http://www.dnr.state.wi.us/org/aw/air/registry/quanttools.html> lists a collection of helpful emission calculation tools available across the web. Ms. Faerber mentioned that contributions to this list are welcome. Please email them to faerba@dnr.state.wi.us.
 - iii) <http://www.dnr.state.wi.us/org/aw/air/registry/quantexamples.html> lists the helpful examples. These examples are also found in the registry handbook.

- iv) <http://www.dnr.state.wi.us/org/aw/air/registry/download.html> is the Registry Publications directory. All of the materials for registration (Forms, instructions, the handbook, etc) are available on this page. Check back often for new information.

REGISTRY SPECIFICS

1. Eligibility

- a) Any person may register an emission reduction
 - i) Under Wisconsin law, person means:
- b) All Types of Sources
 - i) Stationary Sources
 - ii) Mobile Sources
 - iii) Renewable Energy Projects
 - iv) Energy Efficiency Projects
 - v) Carbon Sequestration Projects
 - vi) Anything else you can think of
- c) Eligibility Requirements (NR 437.03)
 - i) Reductions must:
 - ii) not be required by law
 - iii) occur within Wisconsin
 - iv) result from one or more actions taken
 - v) not have been registered by any other person
 - vi) equal or exceed the registration threshold.
- d) Greenhouse Gases
 - i) carbon dioxide
 - ii) methane
 - iii) nitrous oxide
 - iv) hydrofluorocarbons
 - v) perfluorocarbons
 - vi) sulfur hexafluoride
 - vii) any other gas that traps heat in the atmosphere
- e) Retroactive
 - i) VERs may be retroactively registered
 - (1) GHGs back to 1991
 - (2) Other pollutants back to 1994

2. Quantification

- a) The Emission Reduction
 - i) Baseline Emissions - Reduced Emissions
- b) Quantification
 - i) NR 437.06 - General Quantification Guidelines
 - ii) NR 437.04 - Specific Quantification Protocols
- c) General Guidelines
 - i) Reductions Shall Be Quantified As:
 - (1) Mass Based (lbs. or tons per year) or
 - (2) Rate Based (lbs or tons per unit of input or output)
 - (3) or both
 - ii) VERs and Baselines shall be quantified and reported on a calendar year basis
 - iii) Greenhouse Gas VERs shall be quantified and reported as carbon dioxide equivalents
 - iv) Ozone precursor VERs may be quantified and reported for the 5-month ozone season (May-September) in terms of tons or lbs. per day averaged over the ozone season.
 - v) VERs may be quantified and reported at the project level, the facility level, or statewide.

- d) Mercury
 - i) VERs that result from mercury collection projects may be reported as pounds of mercury collected, stored and disposed.
- 3. Quantification Protocols
 - a) NR 437.04(2)(a):
 - i) Source Emission Testing performed in accordance with NR 439.07 and 446.04.
 - ii) Continuous Emission Monitoring performed in accordance with NR 439.09 and 439.095.
 - iii) Mass Balance Estimates
- 4. Published Protocols
 - a) Mostly quantification protocols
 - b) One or two reporting protocols
 - c) Apply to all types of sources
 - d) For more detailed information on protocols:
 - i) Registry web site (<http://www.dnr.state.wi.us/org/aw/air/registry/quantprotocols.html>)
 - ii) Registry handbook
 - e) Emission Factors
 - i) Emissions = Source Activity Data x Emission Factor
 - ii) e.g., 1,000 gallons of gasoline burned per year x 20 lbs CO₂ emitted per gallon burned = 20,000 lbs CO₂ emitted per year
 - f) Alternative Protocols
 - i) Must submit the following information
 - (1) A copy of the protocol
 - (2) Documentation of the accuracy and replicability of the protocol
 - (3) The name and address of the organization that developed the protocol
 - ii) The Department shall maintain a list of the alternative protocols submitted
 - g) No Protocol
 - i) When no protocol is available, the action may be registered without quantifying the emission reduction.
- 5. Baseline Determination
 - a) The Emission Reduction
 - b) Standard Baseline
 - i) "Baselines for emission reduction actions shall be determined as the average annual actual emissions or emission rate for the 2 years immediately preceding the year in which the VER action is taken." NR 437.05(1)(a)
 - c) Baseline for Avoided Emissions
 - i) For Renewable Energy And Energy Efficiency Projects:
 - ii) Baseline = the average annual emission rate for the Wisconsin generating system of the electric power generator whose emissions are avoided, given in terms of mass per unit of energy produced. NR 437.05(1)(b)
 - d) Carbon Sequestration Projects
 - i) Baseline = the amount of carbon, quantified in terms of carbon dioxide equivalents, stored in the carbon sequestration project area at the beginning of the project. NR 437.05(3)
 - e) Alternative Baselines
 - i) Alternative years may be used if the standard baseline (two year average) is not representative
 - f) No prior emissions
 - i) use applicable emission limit
 - ii) use industry or activity average
 - g) No Baseline
 - i) "When no quantification protocol is available to determine a baseline, the action may be registered without determining a baseline." NR 437.05(4)
- 6. Verification - Or how do I know that my emission reduction is real?

- a) No verification is required to register an emission reduction.
 - b) Verification is strongly encouraged.
 - c) To verify means to establish the truth, accuracy, or reality of a voluntary emission reduction.
 - d) Tiers of Verification
 - i) Self audit
 - ii) conduct and document QA and QC procedures
 - iii) according to published standards (ISO 14010)
 - e) Unaccredited third-party verification or audit
 - i) review of calculations, activity data, emission factors
 - f) Accredited third-party verification
 - (1) audit by a certified third-party verifier under a contractual relationship to registrant
 - g) Rigorous Verification
 - i) Verify ownership
 - ii) Conduct field inspection
 - iii) Verify emission factors
 - iv) Verify source activity data
 - v) Check calculations
 - vi) Check baseline determination
 - vii) Ensure accurate reporting
 - viii) Ensure that all registry requirements are met
 - h) Registration
7. How the Registry Works
- a) Registration
 - b) Registration Update
 - i) VER doesn't change
 - ii) VER does change
 - iii) Correction of Historical Data

EMISSION REDUCTION AND REGISTRATION EXAMPLES

TOM ESTOCK - QUAD GRAPHICS

1. What's in it for me?
 - a) Makes good business sense
 - b) Baseline protection
 - c) Likelihood of required greenhouse gas emission reductions
 - d) Development of cap and trade system
 - e) Creation of credits & offsets for internal growth or for sale on the open market
 - f) Anticipation of changes to greenhouse gas legislation
2. VERR - what's in it for me?
3. Low VOC auto blanket wash
 - a) Allows Quad Graphics to clean rollers without stopping presses
 - b) This was a voluntary changeover
 - c) Reduced from 29% to 2% VOC
 - d) Retrofit 7 offset presses in Sussex facility in January of 2002
 - e) Significant decline in VOC
4. Reduction calculation specifics
 - a) VOC emission amounts listed in material safety data sheets
 - b) Material use was already tracked because of DNR air permit

- c) Emission Baselines and reductions based on:
 - i) WDNR guidelines for determining emissions from lithographic printing (60% fugitives & 40% capture)
 - ii) 95% destruction efficiency as required by operating permits
- 5. Using 2000 through 2001 they came up with baseline of 3775 lbs. VOC emitted from of 20 000 lbs of the original auto blanket wash
 - a) $2,876.53 \text{ gallons} \times 7.30 \text{ pounds per gallon} \times 29\% \text{ VOC} \times 60\% \text{ fugitive} + 2,876.53 \text{ gallons} \times 7.30 \times 29\% \times 40\% \text{ capture} \times 5\% (1 - .95 \text{ destruction efficiency}) = 3,775.56 \text{ pounds}$
- 6. 2002 - 269 lbs VOC emitted from the reformulated auto blanket wash
 - a) $2,830.33 \text{ gallons} \times 7.67 \text{ pounds per gallon} \times 2\% \text{ VOC} \times 60\% \text{ fugitive} + 2,830.33 \text{ gallons} \times 7.67 \times 2\% \times 40\% \text{ capture} \times 5\% (1 - .95 \text{ destruction efficiency}) = 269.19 \text{ pounds}$
- 7. A reduction of 1.75 tons (3,506 lbs) VOC
- 8. This reduction was during a 31% increase in production
- 9. Other VERR projects
 - a) Reduction in rotogravure press emissions
 - i) Permanent total enclosure installed
 - ii) Measuring a 99% control of VOC emissions
 - b) Reduction in offset press emissions
 - i) Same PTE material VOC substitution
 - ii) Collect the VOC emitted from setting the ink
 - iii) Use that collected VOC to fuel the heat setters
 - c) Reduction in emissions from inkjet solvent recovery system
 - i) Capture fugitive emissions and condense into ink for reuse
 - d) Reduction in energy usage
 - i) Compact fluorescent lighting retrofit reduced 3.5MWh of electricity
 - ii) Quad/Graphics worked in cooperation with Orion Energy Systems
 - iii) To quantify the entire reduction they need to calculate energy savings from a decreased use of air conditioning and other cooling systems in the summer months. Compact fluorescent bulbs produce far less heat than incandescent lights.
 - iv) High pressure air detection and repair
 - v) HVAC, Energy Star, waste heat recovery
 - e) Recycling programs
 - f) Wastepaper reductions
 - g) 12-hour work shift benefits
 - h) Duplainville Transport's return load program
 - i) Duplainville Transport is Quad's subsidiary and transportation company
 - ii) They transport products to bulk mail centers in Chicago
 - iii) They make sure to have a full load when returning from Chicago. Empty trucks are wasted fuel and unnecessary emissions.
 - i) Mass transit busses.
 - j) Renewable energy programs

ALLIANT ENERGY - STEVE JACKSON

- 1. Project Description
 - a) Reduction of NO_x Emissions
 - b) Edgewater Generating Station, Sheboygan, WI
 - c) Boiler number 3, a coal-fired unit that produces 770MW
 - d) NO_x reductions were through combustion improvements with no controls.

- e) Mr. Jackson provided more details about the emission reduction. He informed the group that this action was done in advance of a 2007 deadline when compliance limits will be enforced on NOx emissions.
 - f) Alliant was able to both reduce before this deadline, and once the 2007 limits are in place, they are already going beyond the requirements of that law.
 - g) Alliant saw a small efficiency increase, but not enough to justify these improvements from a business perspective. Alliant simply wanted to meet their 2007 deadline.
 - h) Mr. Jackson also mentioned that because NOx is a ozone precursor, the limits on NOx are more strict during the 5 month ozone season, which effectively reduce the reduction that Alliant can claim.
2. Establishing the Baselines
- a) Questions to ask:
 - i) When did the action take place?
 - ii) What is the 24-month period before the action?
 - iii) Do I have data for that period?
 - iv) Will reductions be credible?
 - b) Utilized production and CEM database
 - c) Determined baseline NOx mass and rate
 - d) $\text{Mass} = \text{Monthly Heat Input} * \text{Monthly NOx Rate}$
 - e) Rate = Direct from the CEM
3. Calculating Reductions
- a) Need to know current emission rate
 - b) Subtract baseline rate from current rate to determine reduction in rate (RR)
 - c) Multiply RR by current heat to determine emission reductions (ER)
 - d) $\text{ER} = ((\text{Baseline Rate} - \text{Current Rate}) * \text{Heat Input}) / 2000 \text{ lbs/ton}$
 - e) Then Add the up!
4. Edgewater Unit 4 NOx Reductions
- a) 10,320 tons of NOx reduced - March 2000 through December 2002
 - b) Obtaining management approval for registering reductions
 - c) Completed draft VER forms submittal
 - i) Easy to use forms
 - ii) Attach baseline and reduction calculations
5. Using Reductions
- a) Important to protect the baseline against future regulatory developments
 - b) Important that the WDNR use the reductions in planning
 - c) Utilize reductions to offset increases
 - d) Evaluate the market value of reductions - $10.320 \text{ Tons} * \$3000/\text{Ton} = \30.96 MM
 - e) Reduction ownership can be problematic

DAVID SUMI - PA CONSULTING

Wisconsin's Approach to Quantifying Emission Reductions: Coordinating the Focus on Energy Program with the Wisconsin Voluntary Emission Reduction Registry

1. Objectives of the Presentation

- a) This presentation summarizes how Focus on Energy projects can be coordinated and evaluated in a manner that meets Wisconsin's Registry requirements-as well as potential national/international criteria for tradable credits
 - i) An example of energy savings and emission reduction calculations is also provided - based on an actual Registry Application submission by the Division of Energy, Dept. of Administration

2. The Statewide Public Benefits EE Program

- a) Focus is administered by the Wisconsin Department of Administration (WDOA), Division of Energy, with funding for Focus provided by the Utility Public Benefits fund created by the Wisconsin State Legislature in 1999 as part of their Reliability 2000 initiative

- i) Online information about the Focus programs can be found at the public Focus website (www.focusonenergy.com)

- ii) Evaluation reports for Focus are found on the WDOA website (www.doa.state.wi.us-click on "Reference Center" then "Focus on Energy Evaluation Reports")

3. Benefits of the Focus Programs

- a) There are a number of impacts that the state of Wisconsin realizes as a result of the efforts of Focus on Energy

- i) The most direct of these are energy impacts-the energy savings realized through the implementation of energy conservation measures and increased reliability through electric generation demand reduction

- ii) Other impacts associated with the program are environmental benefits-in particular the reduced electric generation emissions

4. Example Quarterly Energy Impacts

- a) The following table shows the total energy and dollars saved by Focus participants from the energy efficiency improvements installed during the most recent quarter (April 1-June 30, 2003) and for the program to date (since June 1, 2001)

- i) Energy savings are realized each year that the energy efficiency measure remains in place, which typically ranges from 7 to 20 years

- ii) The annual verified gross savings of all the measures installed during the indicated time-taken from program administrators' tracking records and verified by evaluators-have been summed to determine the annual kWh and therms saved

5. Annual Verified Gross Tracked Energy Savings and Dollars Saved

6. Environmental Benefits-Avoided Emissions

- a) The most significant environmental benefit of Focus is the reduction of emissions from burning coal and natural gas at power plants and the reduction of emissions from the burning of natural gas by utility customers

- i) Sulfur oxides (SO_x), nitrogen oxides (NO_x), mercury (Hg), and carbon dioxide (CO₂) are the emissions of greatest concern due to their negative impact on health, natural resources, and capital investments

- ii) The following table shows the pounds of these emissions that will be avoided annually due to the energy efficiency improvements installed by Focus participants

- (1) Development of Emissions Factors for Quantification of Environmental Benefits (Final Report). PA Consulting Group. June 25, 2001

- b) Annual Reduction in Emissions from Power Plants and Utility Customers (June 1, 2001-June 30, 2003)

7. Steps in Registering for a Focus Participant

- a) Identify Focus project(s) where the customer has interest in the Registry

- b) Gather baseline data (e.g., billing records)

- c) Calculate the energy impacts (evaluation team will help review for Registry compliance)

- d) Complete the project (i.e., install the measure(s))

- e) Program Administrator helps the customer do the simple Registry form

- f) Evaluation will prepare the required independent, third party documentation of the energy impacts and associated avoided emissions (as per the Registry guidelines)

8. Independent 3rd Party Verification of Energy Impacts

- a) The evaluation team implements periodic rounds of data collection and document review to estimate verified gross and net energy savings for Focus programs

- i) Telephone surveys of participants

- ii) On-site measurement at some participant sites to verify project information and provide actual measured or metered data to support impact estimates
 - iii) Engineering review of program documentation on how the energy savings were calculated
- b) The results of surveys, on-site data, and engineering review are combined to create the gross savings adjustment factor and realization rates
- 9. How will the Evaluation Coordinate with Registering?
 - a) For Focus participants who also want to register indirect avoided emissions the evaluation team will need to gather baseline data and calculate the energy impacts in accordance with the Registry requirements
 - b) What this will mean is that Focus participant projects to be registered will be sampled with certainty in the periodic rounds of Focus impact evaluation activities
- 10. Impact Analysis Process
- 11. Impact Adjustment Factors
- 12. Verification
 - a) From documentation
 - i) Algorithm / calculation approach ok?
 - ii) Parameters reasonable?
 - iii) Result matches STAR?
 - b) From end user/onsite
 - i) Installed?
 - ii) How much?
 - iii) Parameters
 - c) From end user/vendors
 - i) Attribution
- 13. Energy Savings from CFL Bulbs
- 14. Emissions Avoided from CFL Bulbs
- 15. The question arose of who owns their reductions? Because of the nature of this emission reduction this is becoming a public policy question. No recommendations had been made at the time of the workshop.
- 16. Where to access emission factors developed?
 - i) On DOA web site within some report.
 - ii) Emission factors are not different than DNR factors

WRAP UP

- a) A list of contact information for workshop attendees will be sent out by email in early November.
- b) The Registry will be officially launched in November.
- c) Other seminars will follow the launch in November. Check the registry web site at <http://www.dnr.state.wi.us/org/aw/air/registry/> for information about upcoming meetings and workshops.